The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE RECOMMENDED PRACTICE

SAE ARP1967

REV. A

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Superseding ARP1967

Containers, Shipping and Storage, Reusable

1. SCOPE:

This SAE Aerospace Recommended Practice (ARP) recommends design and test criteria for reusable shipping and storage containers for aircraft engines and modules, weapon systems and components, etc. The containers are to provide water-vaporproof and physical protection.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AS4863	Plug, Drain
AS4960	Valve, Pressure and Vacuum Relief
AS5017	Air Filling Valves
AS5135	Desiccant Port and Desiccant Holder
AS5362	Indicator, Humidity and Observation Window
AS26860	Indicator, Humidity, Color Change, Electronic and Observation Window
AS27166	Valve, Pressure Equalization, Gaseous Products
SAE J1173	Size Classification, and Characteristics of Glass Beads

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-8510 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS: http://www.sae.org

2.2 ANSI Publications:

Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002. American Welding Society (AWS), 550 N.W. Le Jeune Road, Miami, FL 33126.

ANSI/AWS D1.1	Structural Welding Code - Steel
ANSI/AWS D1.2	Structural Welding Code Aluminum

2.3 ASME Publications:

Available from ASME, Three Park Avenue, New York, NY 10016-5990.

ASME Y14.100	Engineering Drawing Practices
ASME Y14.5M	Dimensioning and Tolerancing
ASME Y14.24	Types and Applications of Engineering Drawings

2.4 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 573	Standard Test Method for Rubber - Deterioration in an Air Oven
ASTM D 642	Test Method for Determining Compressive Resistance of Shipping Containers, Components, and Unit Loads
ASTM D 880	Standard Method for Impact Testing for Shipping Containers and Systems
ASTM D 999	Test Methods for Vibration Testing of Shipping Containers
ASTM D 1083	Test Methods for Mechanical Handling of Unitized Loads and Large Shipping Cases and Crates
ASTM D 1149	Standard Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber
ASTM D 2000	Standard Classification System for Rubber Products in Automotive Applications
ASTM D 4169	Standard Practice for Performance Testing of Shipping Containers and Systems
ASTM D 4332	Practice for Conditioning Containers, Packages, or Packaging Components for Testing
ASTM D 5276	Test Method for Drop Test of Loaded Containers by Free Fall
ASTM D 6055	Mechanical Handling of Unitized Loads and Large Shipping Cases and Crates
ASTM D 6179	Test Method for Rough Handling of Unitized Loads and Large Shipping Cases and Crates

2.5 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

A-A-208	Ink, Marking, Stencil, Opaque (Porous and Non-Porous Surfaces)
TT-E-527	Enamel, Alkyd, Lusterless, Low VOC Content
TT-E-529	Enamel, Alkyd, Semigloss, Low VOC Content
MIL-D-3464	Desiccants, Activated, Bagged, Packaging Use and Static Dehumidification
MIL-P-23377	Primer Coatings: Epoxy, High-Solids
MIL-C-46168	Coating, Aliphatic Polyurethane, Chemical Agent Resistant
MIL-P-53022	Primer, Epoxy Coating, Corrosion Inhibiting, Lead and Chromate Free
MIL-P-53030	Primer Coating, Epoxy, Water Reducible, Lead and Chromate Free
MIL-C-53072	Chemical Agent Resistant Coating (CARC) System Application Procedures and Quality Control Inspection
MIL-S-81733	Sealing and Coating Compound, Corrosion Inhibitive
MIL-STD-129	Standard Practice for Military Marking
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-HDBK-808	Finish, Protective and Codes for Finishing Schemes for Ground and Ground Support Equipment

3. REQUIREMENTS:

3.1 Sample(s):

3.1.1 Prototype: Unless otherwise specified (see Section 6) a prototype container shall be built using production processes and tooling whenever practical and subjected to the inspections, demonstrations and tests identified herein. Recommend preliminary testing be conducted prior to priming and painting to validate design, prior to qualification testing. Approval of the prototype does not relieve the supplier from the responsibility of producing a first article sample. No prototype will be required for container purchased using a production set of drawings.

3.1.2 First Article Sample: Unless otherwise specified (see Section 6) a first article sample shall be built using production processes, tooling, and personnel and submitted for approval. The first article sample shall be subjected to the test identified herein or as required by the purchasing activity. Approval of the first article sample does not relieve the supplier of responsibility for compliance with all applicable provisions of this document during subsequent production.

3.2 Materials:

Materials to be used in containers shall be identified on specifications and drawings. Materials which are not covered by specifications or which are not specifically described shall be of the lightest practical weight and entirely suitable to meet all performance requirements. Unless specific materials are identified (see Section 6), any suitable material may be considered for the primary container construction.

3.2.1 Metals: Metal components shall be corrosion resistant or suitably processed to resist corrosion. Dissimilar metals shall not be used in intimate contact unless suitably protected against electrolytic and/or galvanic corrosion. When specified (see Section 6), plated or painted parts shall not contact the end item (i.e., engines). When it is necessary that any combination of such dissimilar metals be assembled, an interposing material compatible with each should be used. Cadmium plated parts shall not be used. Materials and processes shall be selected to prevent galling.

3.2.2 Plastics and Composites: Plastics and composites that meet or exceed the performance and quality assurance provisions of this specification may be used. Special consideration shall be given to assure the adequacy of the data package for purposes of reprocurement. For example, the plastics or composite materials, reinforcements, and the location of the reinforcements shall be completely defined. Essential process specifications shall be included in the data package.

3.2.3 Standard, Commercial, and Qualified Parts: Standard, commercial, and qualified parts shall be used to the maximum extent, consistent with reliability, maintainability, and performance. Commercial utility parts such as screws, bolts, nuts, and cotter pins with suitable properties may be used. Standard part numbers shall be referenced in the parts list on the contractor's drawings. The cage code and manufacturers part number for commercial parts shall be provided. Information related to the performance and requirements of the commercial part shall be provided on the drawings. The nongovernmental or government standard should be identified along with manufacturer's cage code and part number whenever possible.

3.3 Design and Construction:

3.3.1 Internal Component Parts:

3.3.1.1 Mounting Provisions: Each container shall include all necessary interior supports, fixtures, and attachments to receive and secure the contained item(s), individual mounting provisions or supports for designated accessories, and provisions for storing detachable hardware during shipment of an empty container. The fasteners shall be single action self-contained devices. A deviation to use threaded fasteners may be allowed provided that these threaded fasteners used in the primary support structure shall be of the self-locking type with nonmetallic inserts. Unless otherwise specified (see Section 6), safety wire shall be used only if the configuration of the component precludes self-locking fasteners.

3.3.1.2 Accessibility: The container shall be designed so as to provide ready accessibility to the interior supports and shall permit the installation and removal of the item by means of overhead lifting devices through a sequence of simple operations.

3.3.1.3 Vibration and Shock Isolation: The container shall be designed so as to prevent damage to the item resulting from the tests of Section 4. Maximum allowable transmissibility, random vibration, critical acceleration levels (G's), or shock spectrum imposed on the item by the tests of Section 4 shall be as described in the contract or purchase order (see Section 6). If consistent with the shock requirements and other design considerations, the resonant frequency of the loaded suspended system in the major translational modes of vibration shall be above 7.0 Hz.

3.3.1.4 Isolators: If elastomeric isolators are used each isolator shall be marked with its date of manufacture. This date shall be visible when the mount is installed. Elastomeric materials used in isolation mounts shall be in accordance with ASTM D 2000. The mount under 20% strain have been tested and certified in accordance with ASTM D 1149 for ozone resistance. The mount shall be subjected to an ozone concentration of 50 parts per hundred million at 40 °C ± 1 °C (104 °F ± 2 °F) and the test duration shall be 168 h. The mount under 20% strain shall be tested and certified in accordance with ASTM D 573 for air-heat aging. This test shall be done at an operating temperature of 80 °C ± 1° C (176 °F ± 2 °F). Elastomeric isolators shall not exceed 18 months old when first installed or as specified by the procuring agency (see Section 6).

3.3.2 Free Drainage: Provisions shall be incorporated to ensure that any water collecting areas on the exterior of the container are provided with a means of drainage in the normal storage position of the container. Where necessary, holes shall be drilled of sufficient size, 10-mm diameter (0.38-in diameter) minimum that they may be adequately painted without danger of subsequent blockage. Where drainage holes are impractical, the affected area shall be filled with a sealing compound conforming to MIL-S-81733, or equivalent, in such a manner as to prevent the collecting of water.

3.3.3 Container Assembly:

3.3.3.1 Permanent Joints: All permanent fittings, seams, and joints, affecting the airtightness of the container, shall be welded, brazed or bonded. The container shall be pressure tested prior to priming or painting when the addition of primer or paint could contribute to the sealing of joints or seams.

3.3.3.2 Container Closure:

3.3.3.2.1 Closure Fasteners: Closure fasteners shall be either hand operated or require the use of only common hand tools, excluding torque wrenches whenever practical, to open and close the container. The closure fasteners, if captivated to the cover section of the container, shall not sustain damage when the cover is removed and placed on the floor, in its normal attitude. The type of fastener shall be selected and specified (see Section 6) by the procuring agency, with consideration of the anticipated service environment. Some options are:

a. Hand Operated Self-Contained Latches: These latches include over center, cam action, and/or spring loaded configurations. They are convenient to use and produce consistent clamping force, and cannot be misplaced or lost, but may not be readily replaceable if damaged. Physical protection by recessing or shielding is required to prevent damage during normal handling.

b. Self-Contained/Captive Threaded Fasteners: These cannot be misplaced or lost. They must be wrenched or properly tightened as they may not be readily replaceable if damaged.

c. Nuts and Bolts (Noncaptive): These can be readily replaced if damaged. They must be wrenched or properly tightened as they might be misplaced or lost.

NOTE: Leak testing is recommended after each closing to ensure environmental protection for the contents.

3.3.3.2.2 Container Sealing: All sealing surfaces shall be such to ensure sealing under the performance requirements of this specification at 10 kPa (1.5 psig) positive and 7 kPa (1.0 psig) negative pressure unless otherwise specified (see Section 6). When specified a structural integrity test shall be conducted at 10 kPa (1.5 psig) above the pressure valve and 0.5 psig below the vacuum valve setting. All gasket joints should be processed so as to form a continuous gasket. The gasket shall remain in place during normal installation and removal of the cover and shall be mechanically secured. When pressurized, the container-stacking interface with a like container shall remain engaged and not present an unsafe condition. When assembled, the sections of the container should apply no loads to the gasket(s) other than those required for sealing. Permanent set of the gasket that will adversely affect the seal of the container is not permitted. Secondary sealing compounds shall not be used. The main closure flange, between the cover and the base, shall be configured such that rainwater will not enter the container if the gasket is missing or fails. When the cover is removed and placed in its normal attitude on a rigid floor, the sealing surfaces shall be a minimum of 6 mm (0.25 in) off the floor.

3.3.3.2.3 Installation Time: The time required to open the container, to remove and reinstall the item, and to close the container for shipment shall be the minimum practical, unless otherwise specified by the procuring activity (see Section 6).

3.3.3.2.4 Leakage: Leakage shall not exceed that specified in 4.5.2.

3.3.4 Handling Provisions: Features provided for lifting, tiedown, and towing shall be combined, wherever practical or as specified (see Section 6). The cover section shall be a lightweight shell of sufficient rigidity to support two loaded shipping containers stacked on top when assembled with the base section and shall contain lifting handles for handling when detached from the base. No obstructions shall exist to interfere with forklift tine insertion when containers are stacked.

3.3.4.1 Lifting Rings, Eyes, or Lugs: Lifting rings, eyes or lugs capable of withstanding the tests prescribed herein, without failure or visible permanent distortion, shall be provided for lifting the container or major sections thereof with chains, hooks, or by a single overhead hook. These rings, eyes or lugs shall be located so as to permit the container to be lifted without significant deviation from the normal storage attitude. Rings, eyes, or lugs, when not in use, shall not project beyond the envelope of the container. Rings and eyes shall have a minimum opening of 64 mm (2.5 in) unless otherwise specified (see Section 6). When specified (see Section 6) the lifting provisions shall be capable of handling unitized loading.

3.3.4.1.1 Container Lifting: Provisions for four-point suspension of loaded rectangular containers shall be located on the container base, unless otherwise specified (see Section 6), for all containers that exceed 68 kg (150 lb) loaded gross weight. Vertical cylindrical containers shall have a minimum of three lift points. Additional lift rings may be required for stable lift of empty containers.

3.3.4.1.2 Cover/Section Lifting: Provisions for cover lifting shall be provided. Manual lifting provisions shall be provided when personnel can safely remove or install the cover or section. The cover or section shall be capable of being lifted without injury to personnel or damage to the item.

3.3.4.2 Tiedown/Towing Provisions: Tiedown and towing provisions shall be provided on the base and shall have a minimum opening of 64 mm (2.5 in) unless otherwise specified (see Section 6). The load-carrying capacity of the tiedown provisions shall be 3 G's forward, 2 G's up, 1.5 G's aft and lateral, and 4.5 G's down unless otherwise specified (see Section 6). There shall be a minimum of two tiedown provisions on each of the longest sides and a minimum of one tiedown provision on each end of containers wider than 1524 mm (60 in). Tiedown and towing provisions, when not in use, shall not project beyond the envelope of the container.

3.3.4.3 Vertical Alignment and Stacking: Each container shall be provided with alignment provisions on top and bottom in order to allow rapid and orderly stacking operations for containers of the same part number. These provisions shall provide lateral and longitudinal restraint and shall not interfere with forklift access. The container shall be capable of supporting the superimposed weight of two like containers including the contents, or a number of like containers with contents stacked to a height of 4877 mm (192 in), whichever is greater. Stacking interface dimensions shall be identified on the container drawings for the cover and base.

3.3.4.4 Lateral Alignment: The container side shall be a flush surface that allows containers to be butted up against one another and that there are no protrusions that could create snagging hazards.

3.3.4.5 Forklift: The container shall be constructed to permit lifting by forklift truck and pallet jack from the sides and ends without employing additional blocking and without permanent deformation of the container. Pockets or openings shall be provided on a container over 1016 mm (40 in) long or that has a gross weight over 68 kg (150 lb). The pockets shall have a minimum clearance of 76 mm (3.0 in) high, and 252 mm (10 in) wide and equally spaced such that the loaded container center of balance is located equi distance from each lift pocket. The inside edges of the pockets shall have a minimum inside clearance of 203 mm (8 in). The pockets shall be provided on each side and each end of the container, except when the center of gravity is more than 1397 mm (55 in) from the end, that end shall have no pockets. Unless otherwise specified (see Section 6) the pockets shall be fully enclosed across the openings and shall provide guidance of the fork tines to achieve safe entry. The container shell material shall be adequately protected or reinforced so that forklift handling will not result in damage that would prevent the container from performing its intended functions. If pallet jack lifting is required specify (see Section 6).

3.3.4.6 Unitized or Banded Loads: When specified (see Section 6) assembled containers shall have provisions for banding of two or more containers into a unitized load. There shall be no damage that impairs the function of the container as a result of the banding. Banding of two containers shall be possible with the containers resting on a flat surface or on another container (provided stacks of more than two containers are anticipated). Special consideration shall be given to forklift pockets that are intended for use in unitizing containers, or tiedown for truck transportation.

3.3.5 Service and Maintenance Facilities: The following service facilities shall be incorporated in one end, or in the case of vertical axes, cylindrical containers, one quadrant of the container, the size of the container permitting. All facilities shall be recessed within the container wall or otherwise protected.

3.3.5.1 Desiccant Holder: The container shall be equipped with a desiccant port(s) conforming to AS5135 unless otherwise specified (see Section 6) and an interior receptacle(s) for desiccant. The total capacity of the receptacles shall be a minimum of 14 cm^3 per 2832 cm^3 (0.5 ft^3 per 100 ft^3) of empty container volume. Each receptacle shall include a refillable enclosure sized to retain “8 unit bags” of desiccant conforming to MIL-D-3464, while permitting the passage of air. The enclosure should be accessible through openings in the surface of the container, which shall be provided with airtight covers. The configuration of the desiccant holder shall be such as to allow maximum desiccant exposure to the interior atmosphere of the container and no portion of the desiccant shall be more than 76 mm (3.0 in) from the interior atmosphere.

3.3.5.2 Humidity Indicator: The container shall incorporate a 30-40-50 percent relative humidity indicator conforming to AS26860 or AS5362 unless otherwise specified (see Section 6). The inside of the container shall be configured to provide free access of the enclosed air to the indicator. Removal and replacement of the indicator shall be possible without removing the container cover. The indicator shall be placed as far as practical away from the desiccant receptacle.

3.3.5.3 Visual Inspection Ports: When specified each container shall have a minimum of two visual inspection ports conforming to AS26860 or AS5362 unless otherwise specified (see Section 6). They shall be located 102 to 305 mm (4 to 12 in) apart and shall allow viewing through one port while illuminating the item inside through the other and shall be installed at a convenient height for ease of use when practical.

3.3.5.4 Pressure Relief Valve(s): Each container shall have automatic pressure relief valve(s) to relieve positive or negative internal pressure. The valve shall be a 7 kPa (1.0 psig) valve conforming to AS27166 or AS4960-10 unless otherwise specified (see Section 6). Removal and replacement of the pressure relief valve(s) shall be possible without removing the container cover.

3.3.5.5 Air Filling Valve: The air-filling valve shall meet the requirements of AS5017, unless otherwise specified (see Section 6).

3.3.5.6 Record Receptacle: When specified (see Section 6) a cylindrical (or rectangular) receptacle shall be provided of such size as to permit easy insertion and removal of the necessary records. The attitude of the installed receptacle shall be such that water will not collect in it when the record receptacle cover is removed. There shall be no access from the record receptacle into the interior compartment of the container. The receptacle shall be closed from the outside with a watertight cover, and provisions shall be made for tamperproof sealing of the record receptacle with seal(s) and safety wire.

3.3.5.7 Receptacle Covers: All record and desiccant receptacle cover(s) shall be permanently attached to the container by means that will not interfere with accessibility to the material(s) in the receptacle(s). The cover(s) shall be capable of being removed and installed by hand, or common hand tools.

3.3.5.8 Drain Plug: When specified (see Section 6) a 19 mm (0.75 in) drain plug conforming to AS4863 J 06 shall be installed in the lowest point of the container shell at the end or quadrant containing the other service receptacles. The plug shall be installed in a bushing from the outside. The location shall be protected against damage from forklifts. The drain plug shall be accessible and operate with the container resting on a rigid floor.

3.3.5.9 Security Seals: Unless otherwise specified (see Section 6) provisions shall be made for tamper proof sealing of the container at diagonal opposite corners, using a seal and safety wire (hole diameter should be a minimum of 4.6 mm (0.18 in) diameter). If railroad type security seals are to be used then they must be specified and the dimensions of hole or slot provided.

3.4 Design Considerations:

3.4.1 Section Assembly: Alignment guides shall be provided to facilitate assembly of major sections of the container. If major sections of the container must be assembled in only one relative position, they shall be furnished with alignment guide(s) that will permit assembly in only that one relative position.

3.4.2 Interchangeability: All subassemblies and parts, including covers and bases, which can be removed during use, maintenance, or refurbishment shall be directly and completely interchangeable.

3.4.3 Welding: Welding shall be in accordance with ANSI/AWS D1.1 for steel and D1.2 for aluminum. External assemblies that are welded to the container body should be welded with continuous weld, if practical. If interrupted welding is used, caulk conforming to MIL-S-81733 or equivalent should be used to fill the gaps. If inverted channels or fabricated hat sections are used where surface contact is less than 13 mm (0.5 in), no caulk should be applied when the part and the skip welds are done on the side of the container. Caution should be taken to ensure that the application of caulk does not form a barrier that will prevent water from escaping from between two pieces of material.

3.5 Container Size:

Unless otherwise specified (see Section 6) the size of the container shall be the minimum consistent with the size of the contents and the performance requirements of this specification. The internal arrangement must provide clearance for the movement of the items, as permitted by the isolation system.

3.6 Weight:

The container shall be of the minimum practical weight consistent with the performance requirements of this specification.

3.7 Finish:

3.7.1 Basic Finishes: Unless otherwise specified (see Section 6) container components shall be finished in accordance with MIL-HDBK-808. Molded finishes that meet or exceed the MIL-HDBK-808 requirements for protection need not be painted. Cad plate shall not be used.

3.7.2 Color: Unless otherwise specified (see Section 6) the interior of the container shall be primed (color optional) and the exterior of the containers shall be primed and then painted green.

3.7.3 Chemical Agent Resistant Coating (CARC): When specified (see Section 6) containers requiring CARC shall be finished in accordance with MIL-C-53072. All steel surfaces, except threaded and other working surfaces, shall be painted with one coat of primer conforming to MIL-P-53022 or MIL-P-53030. All aluminum alloy surfaces should be painted with one coat of primer conforming to MIL-P-23377. All the primed exterior surfaces and skids should be painted with two coats of paint conforming to MIL-C-46168, Type II, color green 383, 34094. Other finishes may be used if they comply with 3.6.10, 3.6.11, 3.6.14 and 3.6.15 of MIL-C-46168. In addition to the marking requirements of 3.9, the letters "CARC" shall be marked in 25 mm (1 in) letters in an area as near as practicable to the nameplate. Paint conforming to MIL-C-46168, Type II, color black (37030 and 37038), shall be used for all marking.

3.7.4 Glass Bead Blasting: When specified (see Section 6) the exterior of the container shall be subjected to glass bead blast to provide uniform matte finish that will hide minor surface imperfections such as scratches, weld irregularities, etc. Size # 18 glass beads per SAE J1173 shall be used with direct air pressure ranging from 345 to 483 kPs (50 to 70 psig). A separator shall be used to provide a reclaim efficiency of 90% by weight of the original sized material.

3.8 Performance:

3.8.1 Ability of the Container to Withstand Handling: When tested in accordance with the requirements of Section 4, the container and all accessories shall sustain no damage that would affect the utility of the container or impair its performance.

3.8.2 Ability of Container to Protect Item: When tested in accordance with the requirements of Section 4, the item shall show no damage. Shock loads transmitted to the item(s) must be within the fragility limits specified (see Section 6).

3.9 Markings:

Markings shall be clearly visible and be waterproof ink, paint or decal. Ink shall conform to A-A-208. Paint shall conform to TT-E-527 or TT-E-529, or equivalent, for standard finishes and MIL-C-46168, Type II, color black (37030 and 37038) for CARC finishes. Markings shall be of a contrasting color. The following markings shall be applied to all containers at the locations and in the sizes indicated unless impractical, in which case markings may be reduced or increased in proportion to the size of the container.

a. Adjacent to the container base lifting rings, eyes or lugs in 45 to 51 mm (1.75 to 2.0 in) letters:

TIE DOWN/LIFT HERE

Adjacent to the container cover lifting rings, eyes or lugs in 45 to 51 mm (1.75 to 2.0 in) letters:

COVER LIFT ONLY
CAUTION: DO NOT LIFT LOADED OR UNLOADED CONTAINER

Arrows 127 mm (5.0 in) long shall point to the rings, eyes, or lugs.

b. On opposite sides of the upper section of the container, corresponding to lift-truck openings on the skids, in 45 to 51 mm (1.75 to 2.0 in) letters:

REUSABLE CONTAINER - DO NOT DESTROY
DO NOT DROP
CAUTION: RELEASE PRESSURE BEFORE OPENING CONTAINER

3.9 (Continued):

c. Adjacent to the record receptacle in 25 mm (1.0 in) letters:

RECORD RECEPTACLE

d. Adjacent to the humidity indicator in 25 mm (1.0 in) letters:

HUMIDITY INDICATOR

e. Adjacent to the relief valve in 25 mm (1.0 in) letters:

RELIEF VALVE
DO NOT DISTURB
CAUTION: RELEASE PRESSURE BEFORE OPENING CONTAINER

f. At the loaded center of balance at fork-lift entries, a vertical line 152 mm (6.0 in) long and 25 mm (1.0 in) wide with the marking adjacent in 25 mm (1.0 in) letters:

LOADED CENTER OF BALANCE

g. Adjacent to the air fill valve in 25 mm (1.0 in) letters:

AIR FILL VALVE

h. In four places on the shell adjacent to and above the closure flange in 25 mm (1.0 in) letters:

CAUTION: RELEASE PRESSURE BEFORE OPENING CONTAINER

i. Adjacent to the view ports in 25 mm (1.0 in) letters:

VIEW PORTS

j. If major sections of the container must be assembled in only one relative position, at one of the alignment guides, two corresponding arrows (one on the top half and one on the bottom half) 127 mm (5.0 in) long, pointing to the alignment guide. Directly above and below the arrows, in 25 mm (1.0 in) letters:

ALIGN HERE

k. At each pair of fork lift pockets, arrows pointing to the pockets, and in 25 mm (1.0 in) high letters:

FORK LIFT

l. Adjacent to the desiccant receptacle port in 25 mm (1.0 in) letters:

DESICCANT RECEPTACLE

3.9 (Continued):

m. A 127 mm (5.0 in) long arrow pointing to the location of the security seal shall be point to the security seal attachment provision. Directly adjacent to the arrow in 25 mm (1.0 in) letters:

SECURITY SEAL

n. In the area of the record receptacle in 25 mm (1.0 in) letters:

FOLLOW OPENING AND CLOSING PROCEDURES OF INSTALLATION INSTRUCTIONS LOCATED IN THE RECORD RECEPTACLE

3.10 Identification:

A nameplate shall be permanently attached to each major section of the container, permanently and legibly marked with the following minimum information:

CONTAINER: SHIPPING & STORAGE REUSABLE
(nomenclature of contained item)
Manufacturer's Part No. (of container)
Serial No.
Manufacturer's Name or trademark

3.10.1 Data Plate: When specified (see Section 6) a data plate for recording rework and technical compliance data shall be permanently attached to one major section of the container and located adjacent to one of the nameplates, preferably on the base.

3.11 Installation Instructions:

Unless otherwise specified (see Section 6) each container shall be accompanied by two sets of installation instructions. One set of instructions shall be placed in the record receptacle. The second set of instructions shall be bonded to the inner wall of the container base or cover for easy viewing when the container cover is removed. The instruction shall be waterproof. Instructions shall include a step-by-step procedure for installing and removing the contained item, including units of desiccant required. Torque values and torqueing sequence for mounting and closure hardware shall be shown on the installation instructions when applicable.

3.12 Data Package:

When required the purchasing activity shall identify the need for drawings and production specification requirement(s). The purchaser shall specify conceptual, developmental, or product drawings/data IAW ASME Y14.100, ASME Y14.5M and ASME Y14.24 (see Section 6). The contract should also state if production level, mono detail drawings, etc. are required.

4. QUALITY ASSURANCE PROVISIONS:

The supplier shall show evidence of approval of his quality system in accordance with the contract or purchase order. Further, the supplier shall produce evidence of having performed in-process quality inspection of first article(s) in accordance with the approved quality system before proceeding with first article(s) inspection.

4.1 Classification of Inspection:

The inspection requirements specified herein are classified as follows:

a. Prototype or first article analysis, inspection, demonstrations, and tests (see 4.2, 4.3)

b. Acceptance inspections (quality conformance inspection). These are tests performed on individual lots for acceptance (see 4.4)

4.2 Test:

4.2.1 Prototype Test (Qualification Test): Prototype test shall be conducted on a container built using production process, tooling, and personnel that will be used in production whenever possible. One container shall be subjected to all the tests specified in 4.5, except 4.5.2.2. Qualification tests shall be conducted prior to the application of a paint system. (Prior to tests, the container shall be subjected to the inspections of 4.3.2 and the demonstrations of 4.3.3.)

4.2.2 First Article Test and/or Qualification Test: First article test shall be conducted on a container built using production process, tooling, and personnel that will be used in production. When specified (see Section 6) the first article container shall be used for qualification test, the container shall be subjected to all the tests specified in 4.5, except 4.5.2.2. Qualification tests shall be conducted prior to the application of a paint system. (Prior to tests, the container shall be subjected to the inspections of 4.3.2 and the demonstrations of 4.3.3.) A minimum of one complete set of piece parts and subassemblies needed to build one container shall be provided as part of the first article for examination against the drawings and the requirements of this specification.

4.3 Test Conditions for the Prototype or First Article Tests:

The container shall be loaded with either an actual item or an appropriate dummy load prior to testing. The dummy load shall conform in weight, moment-of-inertia and maximum envelope to the actual item for which the container is designed. The actual item or dummy load shall be instrumented as a minimum, with a tri-axial accelerometer mounted at the center of gravity, or three individual accelerometers mounted so as to indicate acceleration in the three principal axes, at the center of gravity.

4.3.1 Analysis: The contractor shall be responsible for analyses sufficient to substantiate design adequacy of the container requirements of this specification. The minimum requirements for the analysis are listed below. Data shall be prepared and made available prior to prototype or first article inspection or as indicated in the contract (see Section 6).

a. The maximum weight, moments of inertia and dimensional envelope of the dummy load.

b. A description of the item configuration for which the container is designed will be provided.

c. A dynamic analysis of the container and suspension system when specified (see Section 6).

d. Structural analysis of loaded container based upon the results of the dynamic analysis.

e. Provide loading and unloading instructions.

f. Determine the center of the balance of the loaded and unloaded container with respect to forklift openings and hoisting features.

g. Show that two or more containers can be banded into a unitized load. If forklift pockets are used for banding, the banding shall not interfere with forklift handling or stacking capability.

4.3.2 Inspections: The following requirements shall be verified by inspection at source with government witness.

a. Desiccant Receptacle - The container shall have a desiccant receptacle sized for utilization of “8 unit bag” of desiccant. The receptacle shall retain the desiccant bags while permitting free passage of air. The quantity of units shall be in 6 units of desiccant per 142 cm^2 (5 ft^3) of container volume. The total number of desiccant units in the container shall be increased based on type of dunnage in accordance with manufacturer recommendations.

b. Human Performance - The container shall be visually inspected to verify that lifting handles, desiccant port and closure fasteners or latches have been sized to permit operation with arctic mittens. Satisfactory entry into the lifting recess and operation using arctic mittens shall demonstrate compliance with that requirement.

c. Safety - The container shall be visually inspected to verify that precautions have been taken to secure latches against accidental opening during vibration and ordinary handling. The container features shall have no sharp edges or burrs that may cause injury to personnel working with or around the container.

d. Desiccant Port - The container shall be visually inspected to ensure that the desiccant is accessible from the exterior with the cover of the container installed and that no special tools are required to remove the cover. The desiccant port cover shall be captive to and recessed within the container wall such that damage will be prevented.

4.3.2 (Continued):

e. Humidity Indicator - The container shall be visually inspected to verify that a AS26860 or AS5362 humidity indicator has been installed where adequate air flow is provided to ensure accuracy of humidity readings.

f. Pressure Relief Valve - The container shall be visually inspected to verify that a pressure relief valve has been installed. Quality assurance records shall be reviewed to verify proper operation parameters have been selected. The valve shall meet the requirements of AS27166 or AS4960.

g. Surface Preparation - Prepared surfaces shall be verified visually and by finish certification where required.

h. Faying Surfaces of Weldments - Faying surfaces are to be visually inspected to show that they are not primed. Primer is considered an unacceptable secondary sealant and would disguise discontinuities/defects that may leak.

i. Size and Weight - The empty container shall be measured to define its maximum dimensions, and the container shall be weighed.

j. Drainage - The container shall be visually inspected to verify that there are no uncaulked areas on the container where water can collect. The container cover shall be flat to convex.

k. Workmanship - The container shall be visually inspected for compliance to best commercial workmanship standards.

l. Color - The container shall be inspected to determine that the exterior color of the container is as specified.

m. Identification and Marking - The container shall be inspected to show compliance with the identification and marking requirements of the marking drawing. Marking identification of the container shall be in accordance with MIL-STD-129 and MIL-STD-130. Markings for shipment and storage shall be in accordance with MIL-STD-129.

4.3.3 Demonstration: Unless otherwise specified, the following demonstrations shall be accomplished at the contractor's facility with government witness.

a. Sealing - Install cover on loaded container base and close as for shipment. Ensure that the humidity indicator, relief valve and desiccant access parts are properly secured. Pressurize container to 6.9 kPa (1 psig). Check for leaks; the leak rate shall not exceed 0.345 kPa (0.05 psig) per hour.

b. Desiccant Port - Remove desiccant port cover. Demonstrate captivity of port cover. Install required number of desiccant unit bags without removal of container cover. Reinstall desiccant port cover.

4.3.3 (Continued):

c. Humidity Indicator and Pressure Relief Valve - Remove humidity indicator and pressure relief valve from container base without removing container cover. Reinstall humidity indicator and pressure relief valve.

d. Container Forklift - Employing a forklift truck, demonstrate that forklift tines will enter the forklift tine pockets in the container base. Lift the loaded container from a flat surface without rotation or imbalance and lower onto a flat surface. Withdraw forklift tines without dragging or scuffing.

e. Handling of Stacked Containers - Employing a forklift truck, stack an equivalent of one or more loaded containers with index grooves on a container with a combined height not exceeding 4877 mm (192 in). Engaging the index features on its base with the index feature on the cover of the unit below.

f. Item Assembly Removal and Installation - Remove container cover and release item from shock isolation system. Remove item from container base, move item approximately 3.03 m (10 ft), return item to the container base, secure shock mitigation system and close container as for shipment. Employ a stopwatch to verify that the opening, insertion, and closing process does not exceed the allowable elapsed time. When actual item is used this may also serve as a form and fit test.

g. Base Section - The container shall be visually inspected to verify that a means is provided on the bottom of the base to facilitate secure and stable stacking, and that provisions for forklift handling have been provided. Inspect visually for security seal provisions in the flange area.

h. Cover Section - The cover section shall be inspected visually to verify that indexing provisions have been provided to accommodate a container base when stacked. Inspect visually for security seal provisions that match up with cover security seal provisions.

i. Item Support and Restraint - The container shall be visually inspected to verify that a supporting means, with shock and vibration absorbing capability, has been provided as a part of the base.

j. Human Performance - Operate closure fasteners and demonstrate cover lifting capability with arctic mittens. Demonstrate that there are no obstructions, sharp corners, etc. that may cause injury to operating personnel.

4.4 Acceptance Inspection:

4.4.1 Individual Tests: Each container submitted for acceptance shall be subjected to the tests as described under 4.5.1, 4.5.2.2, and 4.5.8.3.7.

4.4.2 Rejection: Containers that have been rejected may be reworked to correct the defects and resubmitted for acceptance. Full particulars concerning previous rejection and the action taken to correct the defects in the original container shall be furnished to the procuring agency.

4.5 Test Methods:

4.5.1 Examination of Product: The characteristics listed in Table 1 shall be examined.

4.5.2 Leakage, Ambient Temperature: A water or digital manometer shall be used for all leak tests.

CAUTION: Pneumatic pressure may cause explosive failure of weak specimens. The applied pressure should be no greater than necessary to reveal leaks.

4.5.2.1 Leakage, Prototype Test: The container shall be examined for leakage when assembled, loaded with an actual item or appropriate dummy load, and sealed in the same manner as it will be prepared for shipment, except that the relief valve will be blocked off. The container shall be tested at 10 kPa (1.5 psig) (41.5 in water) pressure and 7 kPa (1.0 psig) (28 in water) vacuum. This test is to be performed after completion of all other first article tests. The containers shall be pressurized and allowed to stabilize for at least 15 min before starting the test. The test shall be conducted in an enclosed area with constant temperature, no drafts and no solar load. The pressure shall show no more than 0.2 kPa (0.025 psig) (0.7 in water) change in 30 min. This test shall be conducted after each of the other tests.

4.5.2.2 Leakage, Acceptance Test: The container shall be examined for leakage when assembled and sealed in the same manner as it will be prepared for shipment, except that the relief valve will be blocked off. The container should be tested at 10 kPa (1.5 psig) (42 in water) pressure. This test is to be performed prior to painting. The containers shall be pressurized and allowed to stabilize for 30 minutes before starting the test. The test shall be conducted in an enclosed area with constant temperature, no drafts and no solar load. The pressure shall show no more than 0.086 kPa (0.0125 psig) (0.346 in water) change in 15 min.

4.5.2.3 Leakage, Design Test: A fully assembled prototype container shall be subjected to a pressure test of 10 kPa (1.5 psig) above pressure relief valve setting and a vacuum of 5 kPa (0.5 psig) below the valve setting (i.e., a 1 psig vacuum valve setting will be tested at 1.5 psig vacuum). Failure of any component such as welds, latches, gaskets, etc., shall be cause for rejection. The container may leak, however, the container shall be capable of meeting the test requirements of 4.5.2.1 after completion of this test.

4.5.3 Drop Test: Each container shall be subjected to the following drop tests at ambient temperatures. Unless otherwise specified (see Section 6) the containers shall be conditioned to ASTM D 4332, subjected to low temperature drop tests at -40 °C (-40 °F) and high temperature drop tests at 60 °C (140 °F) minimum. When drop tests are conducted at temperature extremes there is no need to test at ambient temperature also. When testing at temperature extremes half of the total number of drops required shall be done at high temperature and the other half at low temperature. For example: when one corner is impacted at low temperature then the diagonally opposite corner shall also be impacted at low temperature.

TABLE 1 - Table of Characteristics

Characteristics	Rejection Criteria
Material	Not type as specified
Construction	(a) Any component missing or malformed (b) Any detail or feature of fabrication not as specified on drawings
Workmanship	Imperfections that may affect container utility.
Container Sealing	Seal material and surfaces not as specified.
Stacking Provisions	Not as specified.
Rings, Eyes, Lugs, Indexes	Not as specified.
Mounting Provisions	Not as specified.
Finish Markings	Surfaces not treated, primed, or painted as specified. Omitted, incorrect, incomplete, illegible, or improper size, location, color or material.
Welding and Fasteners	Welds not sound, smooth, or free of craters. Welds not clean of flux, scale, and spatter. Rivet heads not tight or free of cracks.
Interchange Ability	Parts of the same identification not interchangeable.
Color	Not as specified.
Drainage	Pockets on the containers collect water.
Record Receptacle	Not as specified.
Desiccant Holder	Not as specified.
Installation Instrument Document	Not as specified.
All Components	Damages resulting from tests (first article test only)

In addition, all castings and extrusions used in the primary support structure shall be visually inspected for cracks and flaws and, when specified, inspected by magnetic particle, dye penetrant, X-ray, or other methods.

4.5.3.1 Rotational Edge Drop Test: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A, Handling – Mechanical, Shipping Cases, Crates, Unitized Loads and Cylindrical Containers – Rotational Drops, shall apply. The test shall be conducted in accordance with ASTM D 6179, Test Method A - Rotational Edge Drop Test. If the container and contents weight and balance are such that the container will tip over and the drop cannot be made from the prescribed height, the sill timber support height shall be increased.

4.5.3.2 Rotational Corner Drop Test: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A, Handling – Mechanical, Shipping Cases, Crates, Unitized Loads and Cylindrical Containers – Rotational Drops, shall apply. The test shall be conducted in accordance with ASTM D 6179, Test Method B - Rotational Corner Drop Test. If the container and contents weight and balance are such that the container will tip over and the drop cannot be made from the prescribed height, the 150 mm (6.0 in) and 300 mm (12 in) timber support height shall be increased proportionally. The support height should not be raised so high as to cause the container to slide on the timbers when the drop end is raised.

4.5.3.3 Free Fall Drop Test: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A, Handling – Manual, shall apply. The test shall be conducted in accordance with ASTM D 5276 on containers with a gross weight less than 67 kg (150 lb). The tests specified in 4.5.3.1, 4.5.3.2, 4.5.3.4, 4.5.4, and 4.5.6 are not required when this test is required.

4.5.3.4 Unsupported Free Fall Drop Test: When specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A, Handling – Mechanical, Crane handling shall apply. The container in its shipping configuration shall be subjected to a 450 mm (18 in) free fall drop test. The container shall be raised vertically from its normal storage position and then allowing it to fall freely on its base onto a rigid surface. The test shall be conducted in accordance with ASTM D 6179, Test Method D - Unsupported Free Fall Drop Test.

4.5.4 Tipover Test: If the container and contents weight and balance are such that the container may tip over when an edge or corner is raised sufficiently for the base to form a 20° angle with the floor, the tipover test should be performed. Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A, Handling – Mechanical, Shipping Cases, Crates, Unitized Loads – Tip/Tipover, shall apply. The test shall be conducted in accordance with ASTM D 6179, Test Method G – Tipover Test.

4.5.5 Vibration Test: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule E, Vehicle Vibration, Sine Test Option, shall apply. The test shall be conducted in accordance with ASTM D 999, Test Method B – Single Container Resonance Test.

4.5.6 Lateral Impact Test: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A, Handling – Mechanical, Shipping Cases, Crates, Unitized Loads – Lateral Impacts, shall apply. The test shall be conducted in accordance with ASTM D 880, Procedure B, 179, Test Method B - Incline Impact Test. If the container is intended for U.S. Navy ship-to-ship transfer, the test shall be conducted at 3 m/s (10 ft/s) on each side and each end when specified (see Section 6).

4.5.7 Static Loading:

4.5.7.1 Superimposed Load Resistance: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule B - Warehouse Stacking, and Schedule C – Vehicle Stacking, shall apply. The stacking test, which results in the highest computed load value, shall apply. The test shall be conducted in accordance with ASTM D 4577, with the optional use of free weights instead of a testing machine allowed. All composite and plastic containers shall be subjected to the load for 168 h at 60 °C (140 °F) and 96% relative humidity. The superimposed load shall be applied through a footprint representing a like container. Metal containers shall be subjected to a load test for 1 h. When specified (see Section 6) cold temperature test shall also be conducted on composite or plastic containers.

4.5.8 Handling Characteristics Test:

4.5.8.1 Hoisting and Tiedown Tests: Hoisting and tiedown strength tests shall be conducted in accordance with ASTM D 4169 and ASTM D 1083 unless otherwise specified (see Section 6). Tiedown load testing shall be conducted as specified herein, unless otherwise specified (see Section 6).

4.5.8.2 Form and Fit Test: The actual item shall be placed in the container in accordance with the installation instructions. It shall then be removed from the container. If the number of man minutes exceeds the specifications, the container shall be rejected.

4.5.8.3 Mechanical Handling Tests:

4.5.8.3.1 Fork Lift Truck Transport: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A – Mechanical, Shipping Cases, Crates, and Unitized Loads – Fork Lift Truck Transport, shall apply. The test shall be conducted in accordance with ASTM D6055, Method A.

4.5.8.3.2 Hoisting with Slings: Unless otherwise specified (see Section 6) ASTM D 4169, Distribution Cycle 18, Assurance Level I, Acceptance Criterion 1, Schedule A, Mechanical, Shipping Cases, Crates, Unitized Loads – Sling Handling, shall apply. The test shall be conducted in accordance with ASTM D 6055, Test Method F – Sling Tests.

4.5.8.3.3 Pushing: Unless otherwise specified (see Section 6) position the forklift forks with the mast vertical or with a slight back tilt to abut the end of the specimen near the floor. Do not support the container with the forklift forks. Push the specimen along a hard dry pavement a distance of 10.7 m (35 ft) in about 85 s at a uniform speed. Observe the specimen for any inadequacies or damage. Record observations. Repeat the test pushing from the side of the container. Record any inadequacies or damage.

4.5.8.3.4 Towing: Unless otherwise specified (see Section 6) attach a towline to the lifting or tie down fittings at one end of the container and attach the towline to the forklift no higher than the container fittings. Tow the container along a hard, dry pavement a distance of 30.5 m (100 ft) in about 23 s at a uniform speed. Record observations and the method of attaching the towline. Then reattach the towline and tow the container sidewise over the same distance. Record observations.

4.5.8.3.5 Stacking: Unless otherwise specified (see Section 6) use the forklift to stack two identical containers (or stack the base on the cover) to verify stackability with a forklift. Record observations and identify any anomalies resulting from stacking. Failure of like containers to stack or present a safety hazard when stacked is cause for rejection.

4.5.8.3.6 Pallet Jack Compatibility Test: If required, the loaded container shall be picked up with a pallet jack and moved a distance of 1524 mm (60 in). Record observations and identify any anomalies resulting from inserting pallet jack.

4.5.8.3.7 Weight Test: All prototype containers shall be weighed and their weight recorded prior to prototype or first articles test. Each production composite or plastic container(s) shall be subjected to a weight test. Containers that weigh 4% more or 2% less than the first article qualification container shall be rejected.

5. PACKAGING AND SHIPMENT OF EMPTY CONTAINERS:

The containers should not be overpacked for transportation unless specified (see Section 6).

6. ORDERING DATA:

Procurement documents should specify the following, as applicable:

a. Title, number and date of this specification
b. Nomenclature, model number(s) of equipment and/or components to be accommodated
c. Applicable detailed drawings
d. Number of containers to be furnished
e. Where first article testing is to be performed
f. Identification and timing for loaned property to be furnished
g. Is the requirement for a prototype waived (3.1.1)
h. Is a first article required (3.1.2)
i. The primary construction material (3.2)
j. Parts or surfaces that should not be platted or painted (3.2.1)
k. Specify type and level of detail required in drawings (3.2.4)
l. Does the mounting provision require safety wire (3.3.1.1)
m. The fragility limit and mass properties of the contents (3.3.1.3 & 3.8.2)
n. Elastomeric isolator age limit at installation (3.3.1.4)
o. The type of closure fastenings (3.3.3.2.1)
p. Container pressure and vacuum level (3.3.3.2.2)
q. The maximum assembly/disassembly time in manhours, if applicable (3.3.3.2.3)
r. Identification of handling provisions (3.3.4)
s. Inside diameter of lifting rings and eyes (3.3.4.1 & 3.3.4.2)
t. Any unitized load requirements (3.3.4.1 & 3.3.4.6)
u. Location of container lifting provision (3.3.4.1)
v. Allowable location of lifting rings if other than base (3.3.4.1.1)
w. Specify alternate G loading requirements (3.3.4.2, 3.8.2)
x. Specify alternate tiedown load carrying capacity (3.3.4.2)
y. Are completely enclosed forktine openings or pallet jack lift required (3.3.4.5)
z. Are banding provisions on container required (3.3.4.6)
aa. Is an alternate desiccant port acceptable (3.3.5.1)
ab. Identify indicator element requirements (3.3.5.2)
ac. Are visual inspection ports required (3.3.5.3)
ad. Alternate pressure valve requirements (3.3.5.4)
ae. Whether air filling valve is required (3.3.5.5)
af. Whether a drain plug is required (3.3.5.8)
ag. Alternate security seal provision (3.3.5.9)
ah. Container size restrictions (3.5)
ai. What finish is required on container (3.7.1)
aj. Finish and color other than specified (3.7.2)
ak. Is CARC painting a requirement (3.7.3)
al. Is glass bead blasting of aluminum required (3.7.4)
am. Whether a data plate is required (3.10.1)
an. Are installation instructions required (3.11)
ao. Are drawings and specification required (3.12)

6. (Continued):

ap. Will first article be used for qualification test (4.2.2)
aq. Data requirements shall be identified (4.3.1)
ar. Whether a dynamic analyses is required (4.3.1.c)
as. Is high and low temperature testing required; specify temperatures if other than those specified (4.5.3)
at. Specify distribution cycle and assurance level (4.5.3.1, 4.5.3.2, 3.5.3.3, 3.5.3.4, 3.5.4, 3.5.5, 4.5.6, 4.5.7.1, 4.5.8.3.1, & 4.5.8.3.2)
au. Is an 18 in drop required (4.5.3.4)
av. Is a tipover test required (4.5.4)
aw. Does container require overpacking for shipping (5)
ax. Any special accessories
ay. Any required additions, deletions, or deviations from the details of this ARP

PREPARED BY SUBCOMMITTEE EG-1D, CONTAINERS OF SAE COMMITTEE EG-1,
AEROSPACE PROPULSION SYSTEMS SUPPORT EQUIPMENT